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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : A45D 34/04, B65D 75/00, A61K 7/32 — A1

(11) International Publication Number: **WO 00/49908**

(43) International Publication Date: 31 August 2000 (31.08.00)

(21) International Application Number: PCT/EP00/01032

(22) International Filing Date: 7 February 2000 (07.02.00)

(30) Priority Data:
9904037.0 22 February 1999 (22.02.99) GB

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(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

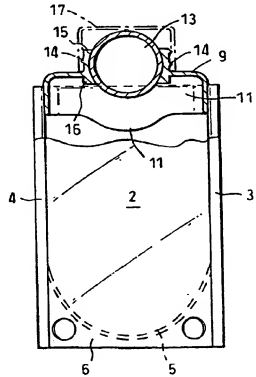
With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: PACKAGE FOR A FLUID COSMETIC COMPOSITION

(57) Abstract

A package suitable for topically applying to human skin a fluid cosmetic composition, and particularly a fluid antiperspirant or deodorant composition which comprises a container having: a sidewall (1, 2) made from one or more impervious sheets which exhibit longitudinal rigidity and transverse flexibility and which are sealed longitudinally (3, 4) to enclose a volume, a flexible closure (5) for the bottom aperture sealed (6, 7) to the sidewall (1, 2), a closure (9) for the top aperture comprising a retaining seating (14) in which a roll ball (13) is mounted and a cap (17).



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Package for a Fluid Cosmetic Composition

The present invention relates to a package for a fluid cosmetic composition and more particularly to a package suitable for dispensing a flowable antiperspirant or deodorant composition.

Background

Flowable antiperspirant or deodorant compositions can comprise a number of forms, such as a liquid or a cream, or possibly a gel or micronized powder. Such flowable compositions have been dispensed in a variety of packages. One common package comprises a roll-on which comprises a reasonably rigid tubular container having at one end a flat base enabling it to stand upright and an opposed second end having a mouth that acts as a seating for a ball which is able to rotate within the seating and extends above the seating, allowing it to dispense the composition topically. A more recent development has been the employment of a ball of larger diameter. The seating desirably has a sufficiently flexible lip to permit the ball to be inserted by being pressed into position. The ball is covered by a cap, which can itself have a flat top surface that enables the package to stand in an invert position. A roll-on usually dispenses a liquid composition, which in many instances is thickened to a sufficient extent to control its egress under gravity through the aperture defined by the ball and the inner surface of the mouth of the container.

The tubular container is commonly either a glass bottle or formed by moulding a thermoplastic. Whilst such containers have proven to be effective, glass containers can be heavy

and moulded thermoplastic containers need dedicated moulding equipment. Consequently, there is a continuing need to devise alternative forms of packaging.

Summary of the invention

According to the present invention, there is provided a package for topically applying a fluid cosmetic composition to human skin which comprises

(i) a container having

(a) a sidewall made from one or more impervious sheets, each sheet having opposite longitudinally extending first and second edges, a first strip adjacent the first edge and a second strip adjacent to the second edge, which sheets are flexible in a transverse direction, the first strip of one sheet being sealed to the second strip of the same sheet or to the second strip of a contiguous sheet when there are two or more sheets forming a closed chain, thereby enclosing a longitudinally extending volume

(b) a first end which defines a non-linear aperture closed by an end sheet and

(c) a second end opposite to the first end which defines a second non-linear aperture,

(ii) a closure for the second end which includes a seating for a roll-ball,

(iii) a roll-ball which is seated within the seating and is partially proud of the seating and

(iv) a cover for the roll-ball.

Advantageously, the package of the present invention provides an elegant means of forming a container for a fluid cosmetic composition, and particularly one which can be employed in conjunction with existing roll-ball applicators, i.e. seating plus ball plus cap. The choice of a transversely flexible material to make the sidewall enables it to conform easily to the seating for the roll ball. Moreover, as the composition flows out of the container, the sidewall deforms, until eventually the container is empty and the sidewall is flat. This deformation has two advantages. First, it becomes readily apparent when the container is almost empty, providing a timely warning to the user that further composition needs to be purchased. Secondly, the container empties without a corresponding ingress of air. This avoids or at least minimises any oxidation of the composition which air might cause.

Detailed Description of the Invention

In the present invention, the container is formed from either one flexible sheet which is bent around and sealed longitudinally or preferably a plurality of sheets which are joined longitudinally to form a chain which is bent round and sealed to enclose a volume. Especially preferably, two sheets are employed. The sheet or chain of sheets forming the sidewall is sufficiently flexible in the transverse direction to be bent around without cracking. Desirably, the sidewall exhibits sufficient rigidity longitudinally such that the container can stand upright, resting on the bottom edge of the sheet or sheets. The thickness of the sheet is desirably selected in order to combine appropriate

longitudinal rigidity with sufficient transverse flexibility. The sheet thickness is often selected within the range of from 0.02 to 1 mm, the thickness selected often taking into account the sheet material employed to make the sidewall. The contents of the container may assist in providing longitudinal rigidity to the container.

The sidewall sheets are preferably formed from a thermoplastic material, such as polyethylene or polypropylene and extruded sheets are especially suitable. Low density (LDPE) and ultra-low density (LLDPE) polyethylene sheets are particularly suitable, and most preferably co-extruded LDPE and LLDPE sheets are employed. The sheets can further comprise reverse printed polyester.

Particularly preferably, the longitudinal join between either the first and second strips or between the respective strips on contiguous sheets forms an external tab, that is to say that the inner face of one sheet is joined to itself or to the inner face of a contiguous sheet. This represents a particularly convenient and relatively simple means to seal one sheet to another. The seal can be effected by adhesive for the sheet material disposed continuously along the strips adjacent to the sheet edge. Particularly suitably, where the sheets are made from a thermoplastic or have a thermoplastic face that is to be joined, the sheets can be joined by heat welding.

The sidewall is preferably made from two side sheets. The two side sheets can be placed the one upon the other and aligned, and joined whilst the sheets are flat, if desired.

Thereafter, the sidewall can be bent to enclose a suitable volume, for example by pushing the tabs towards each other. Preferably, the two sheets are each rectangular and sealed together along the longer edges, most preferably to the bottom edge. The ratio of the length to breadth of the sheet is preferably from 2:1 to 5:1 and especially from 3:1 to 4:1. The bottom edges of the sheets are not sealed together, but by virtue of being straight, enable the container to stand upright reasonably stably on its base after it has been filled.

The container preferably is dimensioned to contain from 20 to 100 mls cosmetic composition, such as antiperspirant or deodorant composition, and especially from 40 to 70 mls.

The first end of the container is closed by an end sheet, which is impervious to the fluid cosmetic composition. The sheet is preferably flexible, and highly desirably is formed from a thermoplastic material such as those contemplated for the sidewall. Desirably, the end sheet is disposed within the first end such that a strip on the end sheet adjacent to its circumferential edge and on its inner face is in contact with the inner face of the sidewall, adjacent to the bottom edge of the sidewall. The end sheet can be sealed to the sidewall by adhesive or hot welding. The end sheet advantageously is a planar sheet which is bent and positioned such that in the container it is non-planar, and particularly is convex in profile, normally extending downwardly in longitudinal cross section from edge to middle of the side shhets. This can be achieved by the end sheet advantageously being sealed to the side sheets closer to the

second end at the side-edge of the side sheets and progressively further from the second end approaching the middle of the side sheets, normally symmetrically.

The sidewall, preferably formed from two side sheets, and first end of the container desirably form a pouch made from two sheets forming the sidewall and an end sheet, each made of a thermoplastics material, sealed together by hot welding contiguous faces adjacent to their edges. When the container has been filled, the pouch at or adjacent to its base (first end) in transverse cross section usually has a maximum front to back spacing between the side sheets relative to the width of the pouch, of from 4:3 to 3:1 and particularly about 2:1, normally tapering to an acute nterfacial angle at the longitudinal seal of the side sheets.

The second end of the container comprises a non-linear aperture which is closed by the applicator seating. The seating suitably comprises a topwall, which preferably is oval, a skirt surrounding the topwall and depending from it, a circular aperture centrally located in the topwall, an upstanding collar surrounding the circular aperture and having inwardly projecting seating means that are dimensioned and spaced longitudinally so as to retain a suitably dimensioned rotatable ball. The topwall and skirt together normally form a rigid closure.

The skirt is dimensioned to fit closely within the non-linear aperture of the container and is preferably sealed to the sidewall closely adjacent to the top edge of the

sidewall. The skirt can further comprise a pair of downwardly pointing strengthening lugs located in the vicinity of the roll ball, i.e. below the collar, preferably symmetrically disposed. Preferably there are two such lugs. The sealing can be accomplished by adhesive or more preferably by heat welding or by ultrasonic welding.

The collar may comprise a single unit housing the ball seating means or it may alternatively comprise a base to which is attached a seating unit for the ball, for example by a screw connection or by a tight push fitting. The seating means conveniently comprises an upper and a lower lip, each preferably presenting a concave profile to the ball. As is conventional in roll ball applicators, the spacing between the ball and the inner wall of the collar is most desirably dimensioned to permit the ball to rotate and carry a film of cosmetic composition from within the package to an exposed area of ball that can be contacted topically to human skin, whilst preventing the ball from falling out of the seating or being pushed into the container on topical application of the cosmetic fluid to human skin. The collar can be provided with an external screw thread to engage with a correspondingly threaded cap for the collar, or the cap can push fit onto the collar.

The seating and the cap are each desirably moulded thermoplastic, for example polyethylene or polypropylene and especially a high density polyethylene.

The diameter of the unit housing the ball is at the discretion of the package manufacturer. Preferably the

housing has an internal diameter that is suitable to house a ball having a diameter selected in the range of from 20 to 50 mm. Particularly convenient ball diameters are either 25 or 35 mm.

The ball is often a hollow moulded thermoplastic ball, though alternative materials can be employed if desired.

The invention also provides a product comprising a package according to the first aspect described hereinbefore, in which the container contains a fluid antiperspirant or deodorant composition that can flow or be squeezed through the aperture by application of normal hand pressure to a flexible side-walled container. Such a formulation is normally observable as a thickened liquid or a cream, and usually has a viscosity within the range of from 500 to 100000 mPas.s.

Viscosity measurements herein correspond to those made using a Brookfield ™ RVT viscometer, No 2 spindle, at 20 rpm at 25°C.

The compositions normally comprise one or more of a) an antiperspirant active and/or b) a deodorant active, a) normally being selected in the range of 0.5 to 60%, often from 5 to 40% and b) normally being selected in the range of from 0.1 to 90% and often up to 60%. The antiperspirant active a) is often an astringent aluminium zirconium or mixed aluminium zirconium salt or a complex thereof, such an aluminium chlorohydrate or a zirconium aluminium complex or an activated chlorohydrate or complex. The deodorant active

can comprise a monohydric C1-C4 alcohol such as ethanol or isopropanol, in which case it is often present at a concentration of at least 10% especially at least 20%, and can function at least in part as a carrier as well as deodorant. The deodorant can additionally or alternatively comprise bactericides such as chlorinated aromatics or biguanides, often at a concentration of not more than 5% and particularly up to 2%.

Formulations employed herein commonly comprise from 10 to 95% of a carrier and especially from 30 to 90%. The carrier can comprise a single phase, be it hydrophobic or hydrophilic, or can comprise a mixture of such phases, normally present as an emulsion. Suitable hydrophobic carriers can include volatile silicone oils such as cyclomethicones (especially tertramer, pentamer and/or hexamer) or corresponding volatile linear methicones, and/or non-volatile hydrocarbon oils. Other suitable carriers include aliphatic ethers or esters containing a C8 to C30 group.

Hydrophilic carriers include water, aliphatic monohydric alcohols, especially ethanol, glycols or tri or polyhydric alcohols.

The increase in viscosity of the fluid formulation is normally obtained by incorporation of one or more structurants, gellants or thickeners in an amount selected from 0.1 to 10% particularly from 0.2 to 5% and in many embodiments from 0.3 to 2% to increase the viscosity to the formulation to within the desired range for a cream.

Suitable structurants include synthetic or natural carbon-based waxes, e.g. beeswax, hydroxystearic acid or castor wax or silicone waxes, or silicone elastomers. Suitable gellants include fatty alcohols, certain amide derivatives of tricarboxylic acids, dibenzylidene sorbitol and N-acyl amino acid derivatives, e.g. n-lauroyl-L-glutamic acid dibutylamide. Suitable thickeners can include gums, starches cellulose derivatives and inorganic thickeners such as clays or silica. Some viscosity increase can also be achieved by selection of carrier constituents of higher viscosity or by incorporation of particulate actives.

The formulation can also contain one or more conventional minor additives, such as in an amount of up to 10%, such as fragrance, talc, or humectant (glycerol or sorbitol).

Except in operative or comparative examples, all numbers herein indicating amounts or ratios of materials, such as limits of ranges are to be understood as modified by about, unless expressly stated otherwise.

In operation, the container is grasped in one hand and either it is inverted or/and pressure is applied to opposing facets of the sidewall, thereby ensuring that the fluid formulation makes contact with the ball and be carried out of the container as a surface layer on the ball as it rotates as a result of being rolled across the skin. Hence, the formulation is distributed over the surface of the skin.

A package according to the present invention will now be described more fully by way of example only and with reference to the accompanying Figures in which:-

Figure 1 represents a side view of the package with cap removed;
Figure 2 represents a view of the base and side of the package with cap in place;
Figure 3 represent a top view of the package with cap removed;
Figure 4 represents a sideways longitudinal cross-section through the package with cap removed;
Figure 5 represents an endways longitudinal cross section through the package with cap removed.

In the Figures, the package comprises a container formed from a front flexible sheet 1 and a rear flexible sheet 2 which are heat welded together along two longitudinally extending strips 3 and 4 adjacent to their longitudinal edges, and a flexible bottom sheet 5 which is heat welded to respectively front sheet 1 along bottom strip 7 and to front sheet 2 along bottom strip 6, strips 6 and 7 being deeper where they are sealed to strips 3 and 4 than where they are remote from strips 3 and 4. The flexible sheets 1 and 2 are made from co-extruded low density polyethylene and ultralow density polyethylene and exhibit flexibility in a transverse direction, whilst retaining stiffness longitudinally. The bottom edge 8 of each of the sheets 1 and 2 is orthogonal to their longitudinally extending edges, so that the container can rest on the bottom edge 8 and stand upright. The flexible bottom sheet 5 is downwardly extending arcuate in

cross section. The upper end of the container is closed by a moulded closure which comprises an oval top surface 9 from which depends a skirt 10 which is heat sealed to flexible sheets 1 and 2. The skirt 10 has a pair of tabs 11 and 12. Located centrally within the top surface 9 of the closure and a seating for a roll ball 13 which comprises an upstanding circular collar 14 provided with an concave upper lip 15 and a concave lower lip 16 which together act as a seating for the roll ball 13, permitting it to rotate but preventing it from falling out and falling into the container. The upstanding circular collar 14 has an external threading which co-operates with i76 to cover the roll ball 13 when the package is not in use.

Examples 1 to 9

These Examples describe fluid formulations which are suitable for employment in a package according to Figures 1 to 5.

The Table

Constituent	Per cent by weight								
Example No	1	2	3	4	5	6	7	8	9
Ethanol		30		60				30	
Isopropanol	30		30		30	60	30		
Hydroxypropyl-cellulose	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
ACH		4	4				20		
AZH								20	
AZAG									20
PHMB				0.2	0.2				
Triclosan						0.1			
Suspending Agent									3
Propylene Carbonate									1
Talc									6
Water + minors	To 100	to 100	to 100	to 100	to 100	to 100	to 100	to 100	
Cyclomethicone + minors									to 100

ACH represents aluminium chlorohydrate, AZH represents aluminium zirconium pentachlorohydrate, AZAG represents aluminium zirconium tetrachlorohydrex glycine complex, and PHMB represents poly(hexamethylenebiguanide).

Claims:

1. A package for topically applying a fluid cosmetic composition to human skin which comprises
(i) a container having
(a) a sidewall made from one or more impervious sheets, each sheet having opposite longitudinally extending first and second edges, a first strip adjacent the first edge and a second strip adjacent to the second edge, which sheets are flexible in a transverse direction, the first strip of one sheet being sealed to the second strip of the same sheet or to the second strip of a contiguous sheet when there are two or more sheets forming a closed chain of sheets, thereby enclosing a longitudinally extending volume
(b) a first end which defines a non-linear aperture closed by an end sheet and
(c) a second end opposite to the first end which defines a second non-linear aperture,
(ii) a closure for the second end which includes a seating for a roll-ball,
(iii) a roll-ball which is seated within the seating and is partially proud of the seating and
(iv) a cover for the roll-ball.

2. A package according to claim 1 in which the sheet having an inner face in contact with the enclosed volume and first and second longitudinally extending edges is bent around such that the inner face adjacent to the first longitudinally extending edge is sealed to

the inner face of the sheet adjacent to the second longitudinally extending edge.

3. A package according to claim 1 or 2 in which the sidewall comprises a pair of flexible sheets which are joined by two longitudinally extending fluid-tight seals and are bent around to enclose a longitudinally extending volume.

4. A package according to any preceding claim in which the flexible sidewall sheets are joined by heat welding.

5. A package according to any preceding claim in which the flexible sidewall sheets comprise co-extruded low density polyethylene and ultra-low density polyethylene.

6. A package according to any preceding claim in which the flexible bottom sheet has a downwardly extending convex profile.

7. A package according to any preceding claim in which the closure for the second end comprises a topwall, preferably oval, a skirt surrounding the topwall and depending therefrom, a circular aperture located centrally within the topwall, an upstanding collar surrounding the circular aperture and having inwardly projecting seating means that are dimensioned and spaced longitudinally so as to retain rotatably a suitably dimensioned ball.

8. A package according to claim 7 in which the skirt has downward lugs positioned below the collar.

9. A package according to any preceding claim in which the closure is heat sealed to the sidewall.

10. A product comprising a package according to any preceding claim in which the container contains a flowable antiperspirant or deodorant composition.

Fig.1.

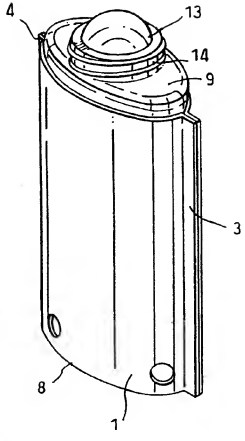


Fig.2.

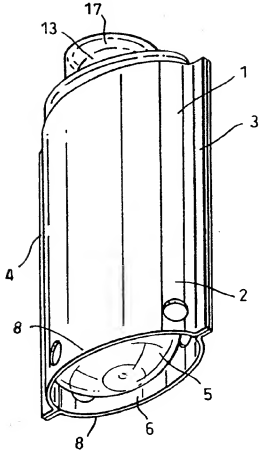


Fig.3.

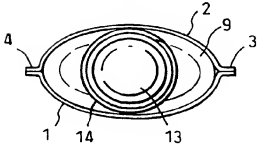


Fig.4.

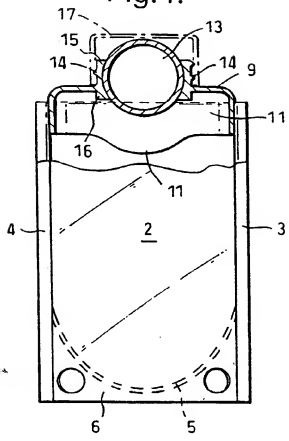
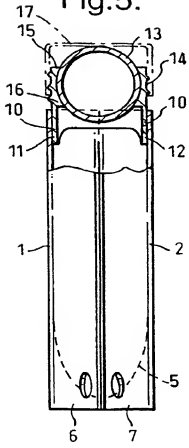


Fig.5.



INTERNATIONAL SEARCH REPORT

Inte .onal Application No
PCT/EP 00/01032

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A45D34/04 B65D75/00 A61K7/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A45D B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 30 00 784 A (METAL BOX LTD.) 24 July 1980 (1980-07-24) page 6, paragraph 3; claim 1; figures 1,2 page 7, last paragraph -page 8, paragraph 4	1-4,6,7, 9
Y	DE 89 00 884 U (INDAG GESELLSCHAFT FÜR INDUSTRIEBEDARF MBH) 23 March 1989 (1989-03-23)	1-4,6,7, 9
A	page 1, paragraph 3 -page 3, paragraph 1; figures 1,3,5	5,10
A	FR 2 630 409 A (A. TARTAGLIONE) 27 October 1989 (1989-10-27) page 1, line 7 - line 34; figures 1,2	1,10

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT

Inter onal Application No
PCT/EP 00/01032

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
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A	FR 1 263 715 A (VITHERM) 11 October 1961 (1961-10-11) page 1, left-hand column, paragraph 1 - paragraph 2; figures 4,5	1
A	EP 0 515 745 A (STANDIPACK PRIVATE LTD) 2 December 1992 (1992-12-02) abstract; figure 1	5
A	US 4 732 299 A (E.E. HOYT) 22 March 1988 (1988-03-22) column 3, line 10 - line 34; figures 2,3	8

INTERNATIONAL SEARCH REPORT

information on patent family members

Inte. onal Application No
PCT/EP 00/01032

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